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IS 10487 (1983): Sand rammer [MTD 14: Foundry]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS : 10487 - 1983

Indian Standard
SPECIFICATION FOR SAND RAMMER

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NEW DELHI 110002

Indian Standard

SPECIFICATION FOR SAND RAMMER

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Indian Standard

SPECIFICATION FOR SAND RAMMER

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 21 February 1983, after the draft finalized by the Foundry Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Since the strength of a moulding sand depends greatly on degree of ramming, the conditions on which standard sample is moulded should be carefully controlled. Reproducible ramming conditions can be achieved with standard sand rammer and specimen tube accessories. The ramming device mounting should be sufficiently rigid.

0.2.1 This standard has been formulated with a view to assist both the manufacturers and the users.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers requirements for sand rammer used to ram specimens for green and dry strength tests of mould and core sands.

1.1.1 Typical sand rammer is illustrated in Fig. 1. However, any other suitable design satisfying the requirements of this standard may also be used.

2. SUPPLY OF MATERIAL

2.1 General requirements relating to the supply of sand rammer shall be as laid down in IS : 1918-1966†.

*Rules for rounding off numerical values (*revised*).

†Methods of physical tests for foundry sands.

3. MATERIAL

3.1 Material specified in this standard shall comply with the following requirements:

<i>Material</i>	<i>Grade and Specification</i>
Grey iron castings	FG-220 of IS : 210-1978*
Medium carbon steel section	35C4 or 40C8 of IS : 1570 (Part II)-1979†
Mild steel	IS : 226-1975‡

3.1.1 All other parts which are not specified in this standard shall be manufactured from mild steel in accordance with IS : 226-1975‡.

4. CONSTRUCTIONAL REQUIREMENTS

4.1 Body — The rammer body shall be of grey iron castings.

4.1.1 The make and construction shall be such as to absorb shock loading and shall be mounted on a rigid base. It shall also be free from harmful surface or subsurface defects.

4.1.2 The base casting shall have a boss, machined on the top surface, to locate the pedestal cup to the specimen tube.

4.2 Sliding Weight — The sliding weight shall be of grey iron casting. It shall weigh 6.36 ± 0.01 kg and shall be mounted in such a manner, that it can slide freely upward and downward, with minimum lateral play, on the rod for a distance of 50 ± 0.25 mm with the help of a mechanical cam device.

4.2.1 Total mass of the moving parts of the assembly shall be 7.94 ± 0.02 kg.

4.2.1.1 The rammer bar and cam shall be manufactured from medium carbon steel and suitably heat treated to give a hardness of 35 to 40 HRC.

4.3 Ramming Plunger — Ramming plunger shall be of medium carbon steel.

4.3.1 Diameter of bottom face of the ramming plunger shall be within $50^{+0.05}_{-0.089}$ mm (50 e 8).

*Specification for grey iron castings (*third revision*).

†Schedule for wrought steels for general engineering purposes : Part II Carbon steels (unalloyed steels) (*first revision*).

‡Specification for structural steel (standard quality) (*fifth revision*).

4.3.2 The bottom face of the plunger head and the machined surface of the base shall be parallel to each other within 0.05 mm at the periphery.

4.4 Specimen Tube — The specimen tube for ramming shall be of medium carbon steel, and shall be hard chrome plated in accordance with IS : 1337-1980*. Alternatively material like wear-resistant steel, hardened to 55 to 60 HRC and ground may also be used for specimen tube.

4.4.1 Dimensions of the specimen tube shall be as shown in Fig. 2.

4.4.2 For making specimens of low green strength (core sand) split specimen tube may be used.

4.4.3 To suit the specimen tube, bottom pedestal cups shall be provided, with suitable location to place the specimen tube in the centre of ramming plunger (see Fig. 1 and 3).

4.5 Stripping Post — It is a specially designed plunger to take out the rammed sand specimen from the specimen tube without any damage or change in shape of the specimen. The plunger head shall be within $50^{+0.08}_{-0.119}$ mm (50 d8) in diameter.

4.6 Tolerance Marker — A scale with three horizontal tolerance marks shall be suitably placed to indicate the correctness of the specimen height. The centre mark shall correspond to the standard height of 50.0 mm of prepared sand specimen after 3 rams. The other two marks shall be 1.0 mm above and 1.0 mm below the centre mark to indicate allowable tolerance in specimen size for routine testing.

5. ACCESSORIES

5.1 The ramming head may be detachable for facilitating replacement and for fixing other accessories for transverse/tensile specimens.

6. WORKMANSHIP AND FINISH

6.1 The workmanship and finish of each part of the equipment shall be of the highest quality and shall be free from any harmful and surface defects.

6.2 All movable parts of the equipment shall be properly coated with a suitable rust-preventive like oil, grease, etc.

6.2.1 All fixed parts of the equipment shall also be suitably painted or coated to prevent rusting.

*Specification for electroplated coatings of hard chromium on iron and steel for engineering purposes (second revision).

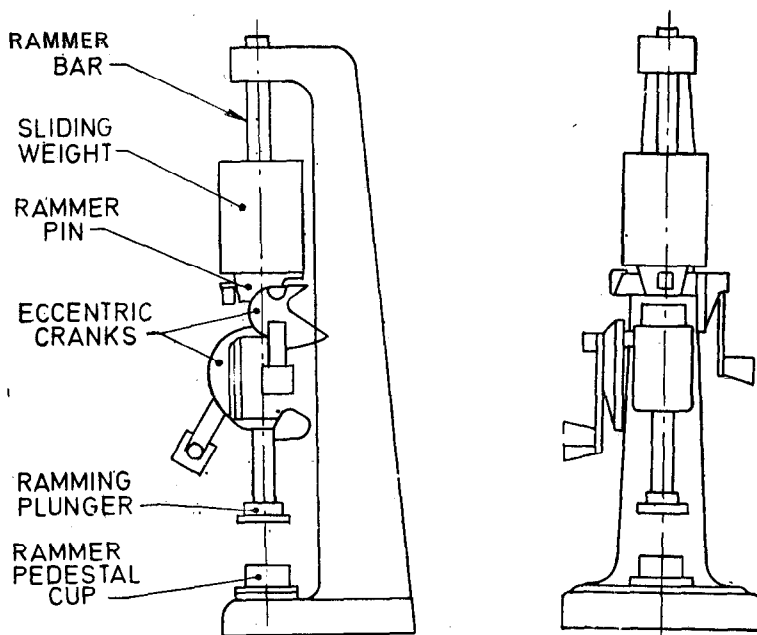
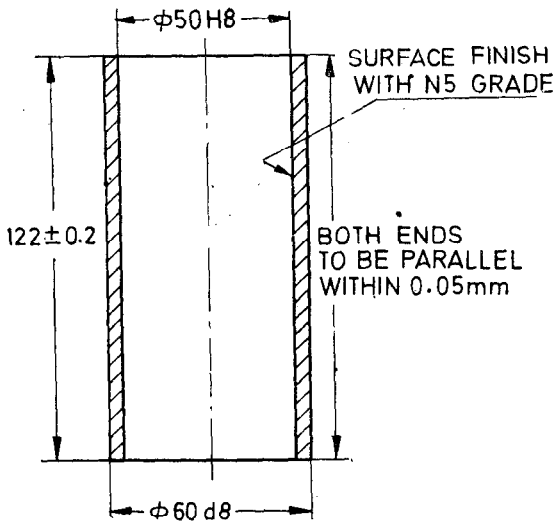
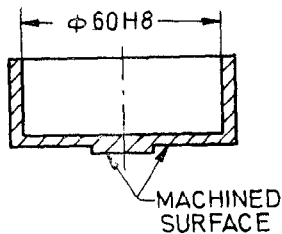


FIG. 1 SAND RAMMER



All dimensions in millimetres.

FIG. 2 SPECIMEN TUBE



All dimensions in millimetres.

FIG. 3 PEDETSAL CUP

7. PACKING

7.1 Proper packing of the equipment and accessories shall be made, to avoid any damage while in transit, or otherwise, as specified by the purchaser.

8. MARKING

8.1 Each equipment shall be marked clearly with the manufacturer's name or trade-mark, serial number and manufacturing date.

8.2 It may also be marked with the ISI Certification Mark.

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